

What is claimed are:

1. A diagnosis apparatus of a fuel pump for an internal combustion engine, provided with a motor unit and a pump unit, comprising:
  - a first diagnosis device diagnosing a function of said fuel pump;
  - a second diagnosis device diagnosing whether or not said motor unit is abnormal when it is diagnosed by said first diagnosis device that the function of said fuel pump is abnormal; and
  - a diagnosis signal output device outputting a signal indicating a failure of said motor unit when it is diagnosed by said second diagnosis device that said motor unit is abnormal, and outputting a signal indicating a failure of said pump unit when it is diagnosed by said second diagnosis device that said motor unit is normal.
2. A diagnosis apparatus of a fuel pump for an internal combustion engine according to claim 1,
  - wherein said first diagnosis device comprises:
    - a pressure detector detecting a fuel pressure on the downstream side of said fuel pump; and
    - a judging device judging that the function of said fuel pump is abnormal when the fuel pressure detected by said pressure detector is less than a slice level.
3. A diagnosis apparatus of a fuel pump for an internal combustion engine according to claim 2,
  - wherein said first diagnosis device further comprises;
    - a slice level setting device variably setting said slice level according to a drive control signal for said fuel pump.
4. A diagnosis apparatus of a fuel pump for an internal combustion engine according to claim 1,
  - wherein said second diagnosis device comprises:
    - a voltage detector detecting a voltage applied on said motor unit; and
    - a judging device judging an abnormality in the voltage detected by said voltage detector as an abnormality in said motor unit.
5. A diagnosis apparatus of a fuel pump for an internal combustion engine according to claim 1,
  - wherein said second diagnosis device comprises:
    - a power consumption detector detecting the power consumption in said motor unit; and
    - a judging device judging an abnormality in the power consumption detected

by said power consumption detector as an abnormality in said motor unit.

6. A diagnosis apparatus of a fuel pump for an internal combustion engine according to claim 1, further comprising;

a warning device giving a warning based on a signal output from said diagnosis signal output device.

7. A diagnosis apparatus of a fuel pump for an internal combustion engine according to claim 1,

wherein the motor unit and the pump unit in said fuel pump are constructed to be exchangeable separately.

8. A diagnosis apparatus of a fuel pump for an internal combustion engine, provided with a motor unit and a pump unit, comprising:

first diagnosis means for diagnosing a function of said fuel pump;

second diagnosis means for diagnosing whether or not said motor unit is abnormal when it is diagnosed by said first diagnosis means that the function of said fuel pump is abnormal; and

diagnosis signal output means for outputting a signal indicating a failure of said motor unit when it is diagnosed by said second diagnosis means that said motor unit is abnormal, and for outputting a signal indicating a failure of said pump unit when it is diagnosed by said second diagnosis means that said motor unit is normal.

9. A diagnosis method of a fuel pump for an internal combustion engine, provided with a motor unit and a pump unit, comprising the steps of:

diagnosing a function of said fuel pump;

diagnosing whether or not said motor unit is abnormal when it is diagnosed that the function of said fuel pump is abnormal;

outputting a signal indicating a failure of said motor unit when it is diagnosed that said motor unit is abnormal; and

outputting a signal indicating a failure of said pump unit when it is diagnosed that said motor unit is normal.

10. A diagnosis method of a fuel pump for an internal combustion engine according to claim 9,

wherein said step of diagnosing a function of said fuel pump comprises the steps of:

detecting a fuel pressure on the downstream side of said fuel pump; and

judging that the function of said fuel pump is abnormal when the fuel pressure is less than a slice level.

11. A diagnosis method of a fuel pump for an internal combustion engine according to claim 10,

wherein said step of diagnosing a function of said fuel pump further comprises the step of;

variably setting said slice level according to a drive control signal for said fuel pump.

12. A diagnosis method of a fuel pump for an internal combustion engine according to claim 9,

wherein said step of diagnosing an abnormality in said motor unit comprises the steps of:

detecting a voltage applied on said monitor unit; and

judging an abnormality in the voltage as an abnormality in said motor unit.

13. A diagnosis method of a fuel pump for an internal combustion engine according to claim 9,

wherein said step of diagnosing an abnormality in said motor unit comprises the steps of:

detecting the power consumption in said motor unit; and

judging an abnormality in the power consumption as an abnormality in said motor unit.

14. A diagnosis method of a fuel pump for an internal combustion engine according to claim 9, further comprising the step of;

giving a warning based on the signal indicating the failure of said motor unit and the signal indicating the failure of said pump unit.